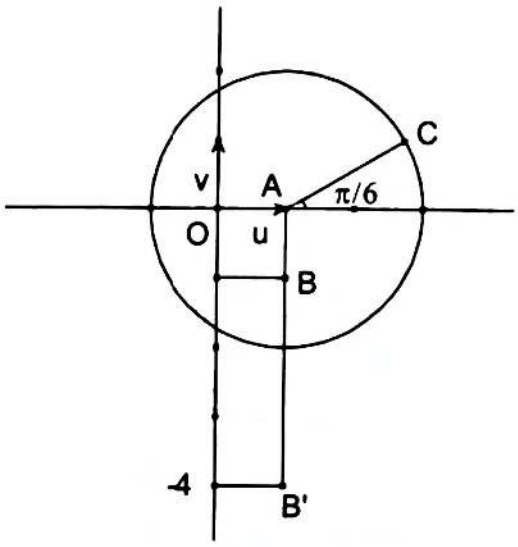
b)



2) $z_c = 1 + 2e^{i\frac{\pi}{6}}$

a) $AC = |z_C - z_A| = \left|2e^{i\frac{\pi}{6}}\right| = 2$

b) $\left(\vec{u}, \widehat{\overrightarrow{AC}}\right) \equiv Arg(z_C - z_A)(2\pi) \equiv Arg(2e^{i\frac{\pi}{6}})(2\pi) \equiv \frac{\pi}{6}(2\pi)$

c) $C \in \zeta(A,2)$ et $\left(\vec{u}, \widehat{\overrightarrow{AC}}\right) \equiv +\frac{\pi}{6}(2\pi)$

d) $z_{f(C)} = \frac{\overline{z_C} + 3}{\overline{z_C} - 1} = \frac{1 + 2e^{-i\frac{\pi}{2}} + 3}{1 + 2e^{-i\frac{\pi}{6}} - 1} = \frac{4 + 2e^{-i\frac{\pi}{6}}}{2e^{-i\frac{\pi}{6}}} = \frac{\left(4 + 2e^{-i\frac{\pi}{6}}\right)}{2} e^{i\frac{\pi}{6}} = \left(2 + e^{-i\frac{\pi}{6}}\right) e^{i\frac{\pi}{6}} = 2e^{i\frac{\pi}{6}} + 1 = z_C$

D'où $f(C) = C$

3)a) $\left(\overline{z} - 1\right)\left(z' - 1\right) = \left(\overline{z} - 1\right)\left(\frac{\overline{z} + 3}{\overline{z} - 1} - 1\right) = \left(\overline{z} + 3\right) - \left(\overline{z} - 1\right) = 4$

b) $AM.AM' = |z - 1||z' - 1| = \left|\overline{z - 1}\right||z' - 1| = \left|\overline{z} - 1\right||z' - 1| = \left|\left(\overline{z} - 1\right)\left(z' - 1\right)\right| = |4| = 4$

c) $M \in \zeta(A,2) \Leftrightarrow AM = 2 \Leftrightarrow 2.AM' = 4 \Leftrightarrow AM' = 2 \Leftrightarrow M' \in \zeta(A,2)$

D'où l'image de (ζ) par f est lui-même.

Qarray.tn - Aqra Blech - Qarray.tn